



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,044	09/19/2005	Peter Malm	P15104US2	9832
27045	7590	06/26/2006	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024			RADOSEVICH, STEVEN D	
			ART UNIT	PAPER NUMBER
			2138	

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,044	<b>Applicant(s)</b> MALM, PETER	
	<b>Examiner</b> Steven D. Radosevich	<b>Art Unit</b> 2138	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☒ Claim(s) 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-39 are present for examination.

#### ***Priority***

Acknowledgement is made that foreign priority is claimed for this application and as such the priority date (07/01/2002) is being used for this examination.

#### ***Information Disclosure Statement***

Acknowledgement is made that an Information Disclosure Statement (IDS) was provided with the application and had been reviewed and considered.

#### ***Drawings***

The figures (3-4 and 6) are objected to since it is unclear to the examiner what is being illustrated. The objection for each figure is explained as follows per figure.

As per figure 3, it is unclear to the examiner what is being illustrated and in what direction data is propagating through the connections between components. Examiner recommends labels for each component and directional arrows on each of the connection lines to overcome this objection.

As per figure 4, it is unclear to the examiner what is being illustrated. The specification indicates on page 9 lines 1-2 that bits are being illustrated, however no bits are illustrated nor the quantity of bits or value of each bit.

As per figure 6, it is unclear to the examiner what amount of time transpires since there are not units of time given on the time axis. Additionally it is unclear to the examiner what happened to blocks 10 and 11 in the fourth case since decoding did not take place within the allotted amount of time in case three for blocks 10 and 11. Finally it is unclear to the examiner why the start times for decoding between blocks and cases are different.

Appropriate correction is required for each of the figures to overcome the objections.

### ***Claim Objections***

Claim 24 is objected to because of the following informalities:

In line 3 of the claim "(72)" appears wherein in previous claims that claim 24 is dependent on the applicant has moved to strike it from the claims.

Appropriate correction is required.

Claim 24 is objected to because of the following informalities:

There appears to be two claim twenty-four wherein the second has been canceled.

For the purposes of this examination the examiner is examining the first claim 24 as it appears on the page and disregarding the second as an error. Appropriate correction is required.

### ***Specification***

The abstract of the disclosure is objected to because both the communication network and the wireless link have the same numerical value "21" on page 5 of the specification which does not correspond to the figure (figure 1) being described.

Correction is required. See MPEP § 608.01(b).

The abstract of the disclosure is objected to because both the ARQ-protocol and HARQ-protocol have the same numerical value "51" on pages 6 and 7 of the specification which does not correspond to the figure (figure 2) being described.

Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 39, A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and

then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 38 recites the broad recitation "mobile telephone," claim 39 which is dependent on claim 28 recites "communicator, an electrical organizer, or a smartphone" which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman (6252917 B1), as evidenced and in view of both Tong et al. (2001/0034209 A1) and Rocher et al. (3754211).

1. As per claim 1, Freeman teaches a method for scheduling a decoding process of coded data blocks transmitted over a wireless link in a communication network, the method comprising:

Storing a coded data block in a queue if all decoders of a cluster of iterative decoders are unavailable (column 3 lines 17-20); and

Decoding the coded data block in a decoder of said cluster (column 2 lines 62-63);

Freeman does not specifically teach wherein the method comprises:

Returning any of the coded data block being unsuccessfully decoded to said queue; and

Combining said unsuccessfully decoded data block with a corresponding retransmitted coded data block.

However those of ordinary skill in the art at the time the invention was made would recognize that returning any coded data block unsuccessfully decoded back to the queue and later combining said unsuccessfully decoded data block with a corresponding retransmitted coded data is well known. The art is replete with references; see for example within the attached 892 paragraph 0023 in Tong et al. (2001/0034209) wherein "soft combining" is disclosed.

Therefor one of ordinary skill in the art at the time the invention was made would have been motivated to incorporate "soft combining" such as it is taught by Tong within Freeman's method of storing and decoding coded data block(s) so as to minimize retransmission and to maximize total data throughput.

2. As per claim 19, Freeman teaches an electronic communication apparatus capable of decoding coded data blocks received over a wireless link in a communication network, the apparatus comprising:

A queue, which is adapted for temporarily storing the coded data blocks (figures 3 and 7 along with column 3 lines 17-20 and column 6 lines 54-61); and

A cluster of decoders, which is adapted to decode the coded data blocks when any of the decoders of the cluster is available (figure 3, column 3 lines 17-20, column 6 lines 54-61, and column 9 lines 40-43).

Freeman does not specifically teach wherein the apparatus comprises:

A cluster of decoder, which is adapted to decode the coded data blocks when any of the decoders of the cluster is available and to return to said queue any coded data block being unsuccessfully decoded by any of said decoders; and

A controller, which is adapted to combine the coded data block being unsuccessfully decoded with a corresponding retransmitted coded data block.

However those of ordinary skill in the art at the time the invention was made would recognize that returning any coded data block unsuccessfully decoded back to the queue and later with the use of a controller combine said unsuccessfully decoded



data block with a corresponding retransmitted coded data is well known. The art is replete with references; see for example within the attached 892 paragraph 0023 in Tong et al. (2001/0034209) wherein "soft combining" is disclosed.

Therefor one of ordinary skill in the art at the time the invention was made would have been motivated to incorporate "soft combining" such as it is taught by Tong within Freeman's apparatus of storing and decoding coded data block(s) so as to minimizes retransmission and to maximize total data throughput.

3. As per claims 2 and 20, Freeman as modified teaches wherein the decoders of the cluster are arranged in parallel (Freeman - see figure 3 and column 6 lines 57-61).

4. As per claims 3 and 23, Freeman as modified teaches wherein coded data block(s) are stored in a queue, decoded by a decoder within a cluster wherein iterative decoders are arranged in parallel, returned to the queue wherein decoding is not successful, and combining the unsuccessfully decoded data block(s) with corresponding retransmitted coded data block(s).

Freeman as modified does not specifically teach wherein a transmission between a physical layer of stack-of protocols in a communication apparatus and a physical layer of a stack of protocols in the communication network is controlled by a protocol requiring an ACK/NACK-report of the transmission within a predetermined time limit.

However those of ordinary skill in the art at the time the invention was made would recognize that transmission between physical layers of protocols requiring an ACK/NACK-report of the transmission within a predetermined time limit is well known. The art is replete with references; see for example within the attached 892 column 12

lines 4-8 in Rocher et al (3754211) wherein a minimum time is waited prior to transmission of a ACK/NACK-report.

Therefor one or ordinary skill in the art at the time the invention was made would have been motivated to modify the method/apparatus as taught by Freeman wherein the transmission between physical layers of protocols requires an ACK/NACK-report of the transmission within a predetermined time limit such as the one taught by Rocher so the method/apparatus can operate within real time and/or be adjusted so that excessive time is not spend on decoding any single coded data block hindering the performance of the method/apparatus.

5. As per claims 4, 6, 7, 24, 26, and 27 Freeman as modified teaches wherein the NACK-report is transmitted to a transmitter if the time limit is reached prior to the data block being successfully transmitted (Rocher - column 12 lines 4-8).

6. As per claims 5 and 25, Freeman as modified teaches wherein the ACK-report is transmitted to the transmitter of the data block if said block is successfully decoded in any of the decoders of the cluster within the time limit (Rocher - column 12 lines 4-8).

7. As per claims 8 and 28, Freeman as modified teaches wherein the data block is moved into an end of the queue (Freeman - figure 7 and Tong – paragraph 0023).

8. As per claims 9 and 29, Freeman as modified teaches wherein the data block being unsuccessfully decoded is combined with the retransmitted data block to a combined data block and stored in the queue (Freeman – figure 7 and Tong – paragraph 0023).

9. As per claims 10 and 30, Freeman as modified teaches wherein the combined data block is processed. It has been indicated that the art is replete with references and to see for example within the attached 892 paragraph 0023 in Tong et al. (2001/0034209) wherein "soft combining" is disclosed.

10. As per claims 11, 12, 31, 35, and 36, Freeman as modified teaches wherein the data blocks are moved from the queue to any of the decoders of the cluster according to a First In First Out (FIFO)/"oldest data block first" principle (Freeman - figures 3, 7, 9 and column 9 lines 40-43, column 10 lines 31-33).

11. As per claims 13, 14, 15, 33, and 34 Freeman as modified teaches wherein a maximum number of iterations in a certain decoder of said cluster is adapted automatically by a CPU (Freeman - figures 3, 5 and column 7 lines 40-43).

12. As per claims 16 and 32, Freeman as modified teaches the method/apparatus as described above wherein blocks of coded data are stored, decoded, combined with corresponding retransmitted coded data block(s) when decoding fails, transmission of ACK/NACK-reports dependent on a time limit, and automatically adapting the maximum number of iterations in certain decoders.

Freeman as modified does not specifically teach wherein the decoders are activated automatically by the CPU when a bitrate of a received stream of data blocks reaches certain predefined levels.

However those of ordinary skill in the art at the time the invention was made would recognize that having the CPU automatically activate decoders wherein a bitrate of a received stream of data blocks reaches a certain predefined level is well known.

Therefore one of ordinary skill in the art at the time the invention was made would have been motivated to have the CPU automatically activate decoders wherein a bitrate of a received stream of data blocks reaches a certain predefined level within the method/apparatus as taught by Freeman as modified in-order to process the received stream and keep the queue from being overloaded.

13. As per claims 17 and 37, Freeman as modified teaches wherein the decoding process of any of the decoders of the cluster is terminated before a maximum number of iterations is reached (Rocher – column 12 lines 4-8 with Tong – paragraph 0023 “soft combining”).

14. As per claims 18 and 22, Freeman as modified teaches wherein the coded data blocks are received according to a HARQ (Hybrid ARQ) protocol (Tong – paragraph 0019).

15. As per claim 21, Freeman as modified teaches wherein said apparatus comprises a receiver, which is adapted for receiving the data blocks with a bitrate of up to at least 15 Mbps (Tong – paragraph 0010 line 4).

16. As per claim 38, Freeman as modified teaches wherein said apparatus is a mobile telephone (Freeman – column 1 lines 59-61 and Tong – figure 1 and paragraph 0006 line 8).

17. As per claim 39, Freeman as modified teaches wherein said apparatus is a communicator, and electronic organizer, or a smartphone (Freeman – column 1 lines 59-61 and Tong – figure 1 and paragraph 0006 lines 5-10).

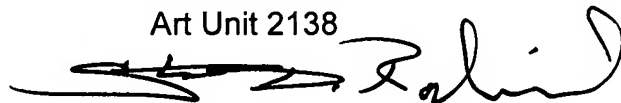
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Radosevich whose telephone number is 571-272-2745. The examiner can normally be reached on 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Radosevich  
Examiner  
Art Unit 2138



ALBERT DECADY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100